CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 99-041

SPECIAL ORDER
FOR
KINGS WASTE & RECYCLING AUTHORITY
HANFORD LANDFILL
KINGS COUNTY
TO MODIFY
WASTE DISCHARGE REQUIREMENTS
ORDER NO. 96-266
FOR
THE CONSTRUCTION OF
AN ENGINEERED ALTERNATIVE
TO THE PRESCRIPTIVE FINAL COVER DESIGN

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The Kings Waste & Recycling Authority (hereafter Discharger) operates the Hanford Landfill about 2.5 miles east of the City of Hanford, in the NE¼ of Section 4, T19S, R22E, MDB&M (Assessor's Parcel Map No. 16-13-51).

2. The 94.6-acre waste management facility consists of one unlined Class III waste management unit of approximately 79 acres that does not include a leachate collection and removal system.

3. The Board adopted Order No. 96-266 on 25 October 1996, which prescribes waste discharge requirements for the facility. This waste management facility is classified as a Class III municipal solid waste landfill pursuant to Title 27, California Code of Regulations, Section 20005 et seq. (hereafter Title 27).

CLOSURE CONSTRUCTION

4. Section 21090(a)(2) of Title 27 requires that closed landfills be provided with a prescriptive closure cover consisting of the following, in ascending order: 1) a two-foot compacted soil foundation layer; 2) a barrier layer comprising not less than one foot of soil containing no waste or leachate, placed on top of the foundation layer and compacted to attain a hydraulic conductivity of 1×10^{-6} cm/sec or less; and 3) a one-foot vegetative soil cover layer.

5. Section 20080(b) of Title 27 allows the Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with §20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably

and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in §20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with §20080(b)(2) of Title 27.

6. The Discharger has submitted an engineered alternative final cover design for closure of the Hanford Landfill in lieu of the prescriptive cover design specified in Waste Discharge Requirements, Order No. 96-266.

7. The engineered alternative proposed by the Discharger for the final cover system consists of, in ascending order: 1) a minimum 12-inch foundation layer placed at 90% relative compaction over an existing 6- to 12-inch intermediate cover; 2) a non-reinforced geosynthetic clay layer (GCL) consisting of sodium bentonite at an approximate dry weight of 0.75 pounds per square foot (psf) sandwiched between two woven geotextiles; and 3) an 18-inch vegetative layer compacted to an approximate relative density of 85 percent.

8. The Discharger adequately demonstrated that construction of a Title 27 prescriptive standard final cover would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design. There is not a sufficient clay source on-site or nearby and the cost of importing clay from off-site or mixing on-site soils with bentonite would cost substantially more than the alternative design.

9. The performance goal of the final cover system is to preclude infiltration of precipitation and surface runoff to minimize leachate generation and thus protect the underlying ground water.

10. A GCL is consistent with the performance goal of Title 27, and provides protection against water quality impairment equivalent to the prescriptive standard specified in Title 27. The performance of the GCL component of the cover system is superior to clay in that: a) it is not prone to desiccation in arid climates; b) it provides a lower hydraulic conductivity to minimize infiltration; c) its textured geotextile surface enhances side slope stability; and d) it provides the flexibility to compensate for differential settlement.

11. The Discharger's Construction Quality Assurance (CQA) plan demonstrates that appropriate measures will be taken to assure that the engineered alternative final cover will be constructed to meet or exceed the design criteria.

12. A third party, independent of both the Discharger and the construction contractor, will perform all of the CQA monitoring tasks during construction of the final cover system.

13. Section 13360(a)(1) of the California Water Code allows the Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.

OTHER CONSIDERATIONS

14. This Order implements the pertinent Sections of Title 27 pertaining to engineered alternatives in accordance with §20080(b) and (c) of Title 27.

15. This action to modify waste discharge requirements for this facility is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.) in accordance with Title 14, CCR, Section 15301.

16. This Order is in conformance with: a.) the *Water Quality Control Plan for Tulare Lake Basin, Second Edition*; b.) the prescriptive standard and performance goals of Title 27 of the California Code of Regulations, §20005 et seq. (Title 27); c.) the prescriptive standard and performance criteria of Part 258, Title 40 of the Code of Federal Regulations (Subtitle D of the Resource Conservation and Recovery Act); and d.) State Water Resources Control Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste.

17. The Board has notified the Discharger and interested agencies and persons of its intent to adopt a Special Order modifying the waste discharge requirements for this discharge, and provided them with an opportunity for a public meeting and an opportunity to submit their written views and recommendations.

18. In a public meeting, the Board heard and considered all comments pertaining to this facility and discharge.

IT IS HEREBY ORDERED that Order No. 96-266 is modified and the Kings Waste & Recycling Authority, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. CLOSURE CONSTRUCTION SPECIFICATIONS

1. Materials used to construct final covers shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the post-closure maintenance period of a waste management unit or portion of a waste management unit.

2. The Discharger shall submit for Executive Officer review and approval **prior to** construction, design plans and specifications for the final cover system, including a Construction Quality Assurance Plan demonstrating that the proposed final cover system will be constructed according to the approved specifications and plans, and shall provide quality control on the materials and construction practices used in construction and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications.

3. If a prescriptive standard clay cap layer is used in the final cover system, then the hydraulic conductivity for the cap determined through laboratory methods shall be confirmed by a Sealed Double-Ring Infiltrometer (SDRI) field test, or an equivalent field test method approved by the Executive Officer, of a test pad constructed in a manner duplicating the clay cap layer construction of the final cover. Test pad construction methods, quality assurance/quality control procedures, and testing shall be in accordance with a construction quality assurance plan approved by the Executive Officer and shall be sufficient to ensure that all parts of the clay cap layer meet the hydraulic conductivity and compaction requirements.

4. The final cover system shall be constructed in accordance with one of the following designs:

   a) The prescriptive standard design which consists of the following, in ascending order: 1) a two-foot compacted soil foundation layer; 2) a barrier layer comprising not less than one foot of soil containing no waste or leachate, placed on top of the foundation layer and compacted to attain a hydraulic conductivity of 1 x 10-6 cm/sec or less; and 3) a one-foot vegetative soil cover layer.; **or**

   b) An engineered alternative composite liner system that is comprised, in ascending order, of the following:

      1) A minimum 12-inch foundation layer placed at 90% relative compaction over an existing 6- to 12-inch intermediate cover;

      2) A non-reinforced geosynthetic clay layer (GCL) consisting of sodium bentonite at an approximate dry weight of 0.75 pounds per square foot (psf) sandwiched between two woven geotextiles; and

      3) An 18-inch vegetative layer compacted to an approximate relative density of 85 percent; **or**

   c) An engineered alternative final cover system as provided by §20080(b) and (c) of Title 27, which must meet the performance goals of the prescriptive design in option a) above, and has been approved by the Executive Officer.

5. If the Discharger proposes to construct a final cover system in which a GCL is placed on top of the foundation layer, the foundation layer shall be prepared in an appropriate manner using accepted

engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.

6. Hydraulic conductivities of soil cover materials shall be determined by laboratory tests using water. Hydraulic conductivities determined through laboratory methods shall be confirmed by field testing in accordance with the Standard Provisions and Reporting Requirements (17 September 1993), Provision D.1. Construction methods and quality assurance procedures shall be sufficient to ensure that all parts of the cap meet the hydraulic conductivity and compaction requirements.

7. The Discharger shall submit, within **30 days** after construction of the final cover system is completed, a construction report for Executive Officer review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.

   The report for the waste management unit shall include as a minimum, but not be limited to, the following:

   a) Test results on the chemical and geotechnical properties of materials used in the containment structure, as specified in these waste discharge requirements.

   b) Test results on the hydraulic conductivity of the clay cover if the prescriptive standard clay layer is used in the final cover system.

   c) Construction quality assurance and quality control procedures and results for all aspects of final cover construction.

B. PROVISIONS

1. Order No. 96-266 remains in full force and effect except as modified by this Order. The Discharger shall comply with the requirements of this Order in addition to the requirements of Order No. 96-266. This Order shall supersede any conflicting requirements in Order No. 96-266.

2. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of the final cover system.

I, GARY M. CARLTON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on 30 April 1999.

GARY M. CARLTON, Executive Officer

DEE:dee/rac

INFORMATION SHEET

SPECIAL ORDER NO. 99-041
KINGS WASTE & RECYCLING AUTHORITY
HANFORD LANDFILL
KINGS COUNTY

Kings Waste & Recycling Authority (hereafter Discharger) operates the Hanford Landfill about 2.5 miles east of the City of Hanford. The facility is regulated by Waste Discharge Requirements, Order No. 96-266, which prescribes waste discharge requirements for closure of the facility, including construction of a prescriptive standard final cover system. The Discharger proposes to construct an engineered alternative final cover system for closure in lieu of the Title 27 prescriptive final cover design specified in Order No. 96-266. The proposed engineered alternative consists of, in ascending order: 1) a minimum 12-inch foundation layer placed at 90% relative compaction over an existing 6- to 12-inch intermediate cover; 2) a non-reinforced geosynthetic clay layer (GCL) consisting of sodium bentonite at an approximate dry weight of 0.75 pounds per square foot (psf) sandwiched between two woven geotextiles; and 3) an 18-inch vegetative layer compacted to an approximate relative density of 85 percent.

The Discharger's Construction Quality Assurance (CQA) plan demonstrates that appropriate measures will be taken to assure that the engineered alternative final cover system will be constructed to meet or exceed the design criteria. A third party, independent of both the Discharger and the construction contractor, will perform all of the CQA monitoring tasks during construction of the liner.

The Discharger adequately demonstrated that construction of a prescriptive standard final cover would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design.

DEE:dee/rac:4/30/99